

REMARKS

Claims 1-243 are now pending in the application. The Examiner is respectfully requested to reconsider and withdraw the rejections in view of the amendments and remarks contained herein. Claims 24-74, 98-154, 173-186, and 189-239 are cancelled.

Applicant would like to thank the Examiner for courtesy extended during the interview on May 17, 2007. An agreement was not reached.

REJECTION UNDER 35 U.S.C. § 103

Claims 1, 3-23, 75, 77-97, 187-188 and 240-243 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Li et al. (U.S. Pat. No. 6,853,568) in combination with Riggio et al. (U.S. Pat. No. 6,493,242).

Claims 2, 76 and 155-172 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Li et al. (U.S. Pat. No. 6,853,568) in combination with Riggio et al. (U.S. Pat. No. 6,493,242) and further in combination with Wittenbreder (U.S. Patent No. 6,822,427). These rejections are respectfully traversed.

With respect to Claim 1, Li in view of Riggio does not show, teach, or suggest inductor having a polarity such that DC currents in the inductors cancel each other or that the inductors have a coefficient of coupling approximately equal to one.

Li, as best understood by Applicant, is directed to a typical buck voltage regulator topology that is used to convert a DC voltage to a lower DC voltage. The voltage regulator of Li is then used to lower winding current of a transformer. Column 2, Lines 44-54. However, Li does not disclose or suggest that the voltage regulator includes common core inductors that mutually cancel DC currents due to their respective polarities and that have a coefficient of coupling approximately equal to one.

In contrast, the polarities for the claimed coupled inductors are selected so that DC currents flowing through the coupled inductors approximately cancel. The cancelling of DC currents, leads to approximately zero DC current flowing through the magnetic core of the inductor assembly. Since there is virtually no DC current flowing through the inductor assembly, a smaller core size may be used for the coupled inductors than for the inductors of the Li system, which may result in a smaller size and lower cost for the inductor assembly. Detailed Description, Paragraph [0043].

Riggio, as best understood by Applicant, fails to cure the deficiencies of Li. Although Riggio discusses varying windings to provide conversion of a voltage to a higher or lower voltage in Column 47, Lines 20-22, Riggio does not disclose or suggest that the inductors have respective polarities that cancel each other or a coefficient of coupling equal to one. Riggio instead appears to teach a typical transformer system that includes a voltage regulator to regulate voltage on a primary winding side and an output receiving the transformed voltage on a secondary winding side. The primary and secondary windings are selected for a particular voltage ratio. Column 43, Lines 7-16. Coefficient of coupling and inductor polarities do not appear to be discussed or implied. Li in view of Riggio alone or in combination therefore do not teach or suggest all the elements of Claim 1.

Applicant notes that the Office Action does not cite sections of either Li or Riggio that disclose or even suggest inductors having the claimed polarity and coefficient of coupling. When evaluating claims for obviousness under 35 U.S.C. §103, all of the limitations must be considered and given weight. *Ex parte Grasselli*, 231 USPQ 393 (Bd. App. 1983), MPEP § 2144.03. Here, it is clear that the Examiner has given little or no consideration of the limitation **and failed to give the limitation any weight**.

Further with respect to Claim 1, Li in view of Riggio does not teach a drive signal generator to generate drive signals each having a duty cycle of approximately 50%, the drive signals to control the at least two conduction switches.

According to the Office Action, Column 2, Lines 25-30 of Li, describe the drive circuit:

In the proposed solution, an integrated magnetic device is employed to achieve a single magnetic device as that of choke in a conventional buck converter, which actually performs as both a power transformer and an output choke filter. For convenient driving consideration, the high side synchronous rectifier is placed in a common ground mode with the low side synchronous rectifier.

As is evident, the above referenced section of Li does not teach a drive signal generator. During the May 17 Interview, the Examiner suggested that the claimed drive signal generator is suggested by the above section because control terminals of transistors 112, 115 require some means for controlling. Li, however, does not explain how the control terminals are controlled. Therefore, Li does not disclose or suggest a system that includes more than one drive signal for more than one respective switch.

The Examiner asserts that Riggio teaches a drive circuit that has a duty cycle of approximately 50%. Applicant has carefully reviewed Column 6, Lines 20-50 of Riggio, which appears to describe a controller (PWFM) that includes a single signal (CLK) that toggles transistors (Q11 and Q21) between on and off states. Riggio does not, however, include more than one drive signal where *each* drive signal has a duty cycle of 50% and *each* drive signal drives a respective switch. Therefore, neither Li nor Riggio, alone or in combination disclose or suggest a drive signal generator that generates multiple drive signals where each drive signal controls a respective switch.

Therefore, Claim 1 is allowable for at least the above reasons. Claims 75, 155, and 164 are allowable for at least similar reasons as Claim 1. Claims 2-23, 76-97, 156-

163, 165-172, 187-188, and 240-243 ultimately depend from Claims 1, 75, 155, and 164 and are allowable for at least similar reasons.

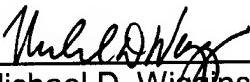
Further, with respect to Claim 9, Li in view of Riggio does not teach or suggest that at least one of the conduction switches of claim 1 includes independently controllable parallel switches. Instead, both Li and Riggio, as best understood by Applicant, include typical voltage control switch configurations having a single control signal for controlling a single switch. Nowhere in either reference is it disclosed as suggested that the switches themselves may include independently controllable switch portions as claimed. Claim 9 is therefore also believed to be allowable for this additional reason.

CONCLUSION

It is believed that all of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Applicant therefore respectfully requests that the Examiner reconsider and withdraw all presently outstanding rejections. It is believed that a full and complete response has been made to the outstanding Office Action and the present application is in condition for allowance. Thus, prompt and favorable consideration of this amendment is respectfully requested. If the Examiner believes that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at (248) 641-1600.

Respectfully submitted,

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